

WHAT IS CLAIMED IS:

1. An ADSL modem apparatus comprising:
a transmitter-receiver that transmits and receives a carrier specified by a communication standard in a handshake procedure; and
an estimation unit that estimates a communication distance to an opposing ADSL modem apparatus in accordance with a reception level of the carrier.
2. The ADSL modem apparatus according to claim 1, wherein the transmitter-receiver transmits and receives a plurality of carriers, and
the estimation unit estimates the communication distance to the opposing ADSL modem by comparing two reception levels of two carriers selected from the plurality of carriers.
3. The ADSL modem apparatus according to claim 1, further comprising a communication unit that changes frequency distribution of signal energy for a transmission signal in accordance with the communication distance estimated by the estimation unit.
4. The ADSL modem apparatus according to claim 3, wherein the communication unit decreases signal energy in a high frequency region and increases signal energy in a low frequency region, when the communication distance to the opposing ADSL modem apparatus increases.
5. An ADSL modem apparatus, comprising:
a transceiver-receiver that transmits and receives a carrier specified by a communication standard and a signal output with changing frequencies in a handshake procedure;

an estimation unit that estimates a communication distance to an opposing ADSL modem apparatus in accordance with a reception level of the carrier and a reception level of the signal output with changing frequencies.

6. The ADSL modem apparatus according to claim 1, wherein the ADSL modem apparatus is located at a remote side, and estimates the communication distance to the opposing ADSL modem apparatus located at a center side.

7. The ADSL modem apparatus according to claim 5, wherein the ADSL modem apparatus is located at a remote side, and estimates the communication distance to the opposing ADSL modem apparatus located at a center side.

8. The ADSL modem apparatus according to claim 1, wherein the ADSL modem apparatus is located at a center side, and estimates the communication distance to the opposing ADSL modem apparatus located at a remote side.

9. The ADSL modem apparatus according to claim 5, wherein the ADSL modem apparatus is located at a center side, and estimates the communication distance to the opposing ADSL modem apparatus located at a remote side.

10. A communication method performed in an ADSL communication apparatus, comprising:

receiving a carrier specified by a communication standard in an handshake procedure from an opposing ADSL communication apparatus;

estimating a communication distance to the opposing ADSL modem apparatus in accordance with a reception level of the carrier; and

changing frequency distribution of signal energy for a transmission signal in accordance with the estimated communication distance.

11. The communication method according to claim 10, wherein the changing decreases a signal energy in a high frequency region and increases a signal energy in a low frequency region, when the communication distance to the opposing ADSL modem apparatus increases.

12. The communication method according to claim 10, further comprising:
receiving at least one sweep signal, the sweep signal being output with changing frequencies by the opposing ADSL modem apparatus,
wherein the estimating estimates the communication distance to the opposing ADSL modem apparatus in accordance with a reception level of the at least one sweep signal in addition to the reception level of the carrier.